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INFANTRY AND AIRCRAFT WEAPONS DIVISION

REPORT ON

RELATIVE EFFECTIVENESS OF TNT,
COMPOSITION B, AND H6 AS MINE FILLERS (U)

Nineteenth Report on Ordnance Project No. TS1-200

(D. A. Project No. 507-06-011)

ORION L. ROGERS

OCTOBER 1959



Aberdeen Proving Ground
Maryland

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RELATIVE EFFECTIVENESS OF TNT, COMPOSITION B, AND H6
AS MINE FILLERS

(U)

OCT 59 1V ROGERS, ORION L.;
PROJ: ORD-TS1-200

UNCLASSIFIED REPORT

C-10, 466

DESCRIPTORS: *EXPLOSIVES, *MINES (ORDNANCE), *PAINTS,
*TANKS (COMBAT VEHICLES), BLAST, EFFECTIVENESS, TESTS,
VULNERABILITY

(U)

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DEVELOPMENT AND PROOF SERVICES
ABERDEEN PROVING GROUND
MARYLAND

AUTHORITY: TT ORD17783
PRIORITY : 1A

OLRogers/ncj/31170

RELATIVE EFFECTIVENESS OF TNT,
COMPOSITION B, AND H6 AS MINE FILLERS (U)

Nineteenth Report on Ordnance Project No. TS1-200

Dates of Test: 18 June 1958 to 2 June 1959

ABSTRACT (C)

This test was conducted to determine the relative effectiveness of TNT, Composition B, and H6 (HBX6). The evaluation is based on a total of 26 charges. Composition B was used as the standard. It was determined that there was no significant difference between TNT and Composition B, and that 3 pounds of H6 was approximately equivalent to 5 pounds of Composition B. It is recommended that the investigation of the relative effectiveness of Composition B and H6 be continued and that the investigation of TNT be discontinued.

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1. (C) INTRODUCTION

This test was initiated by Development and Proof Services to determine the relative effectiveness of TNT, Composition B, and H6 (HBX6) as fillers in blast-type antitank mines. Composition B was selected as the standard against which the other two explosives would be compared.

Since track on a tank is the major target for pressure-fuzed, blast-type mines, two 90-mm gun tanks, M47, were modified to accept the simulated JSIII track which is available at this station.

In general, complete severance of the track is the criterion upon which the determination of relative effectiveness is based. If the detonation of a particular charge failed to sever the track, the target tank was maneuvered by towing to determine whether complete track failure is actually required to immobilize the tank.

2. (U) DESCRIPTION OF MATERIEL

The 29 charges used in this test were loaded at Aberdeen Proving Ground in locally fabricated containers. Each charge consisted of either TNT, Composition B, or H6, boosted with tetryl, and initiated with an electric blasting cap.

The containers were made of 24-gauge galvanized sheet metal, 8.5 inches in diameter by 4.5 inches deep. The closed end of each container was used at the top. A plywood disk, 8.5 inches in diameter by 3/4 inch thick, was used as the base (see container and base in Figure 1 a). The base had a 1-inch hole in its center for insertion of the tetryl booster, and two 1-9/32 inch filler holes equally spaced across its diameter. The base was placed at the position which would yield the desired volume and held with small screws (see Figure 1 b). The charge was then poured.

Based on the geometry of the container and the density of the explosive, the weight of each charge was determined in terms of thickness.

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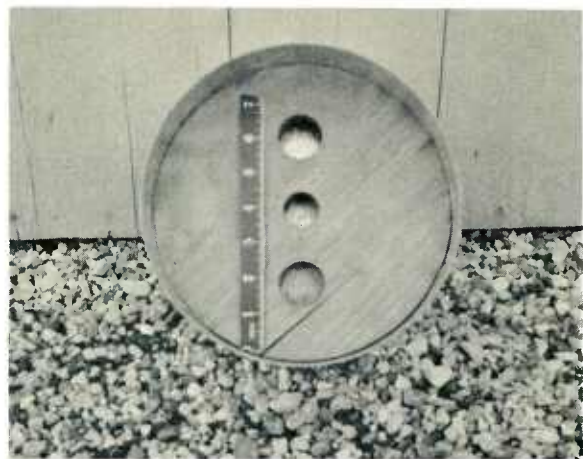
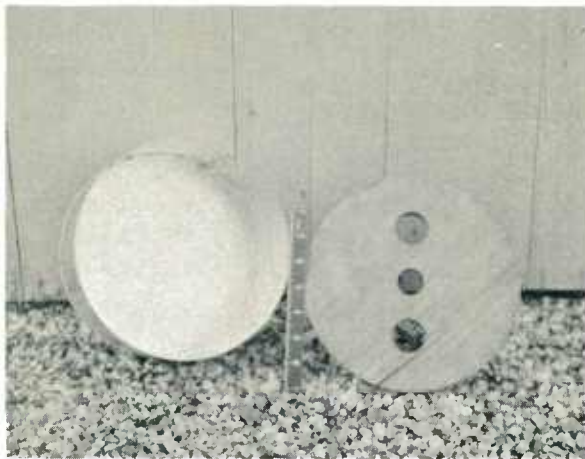


Figure 1

a. Galvanized Charge Container
(Left), Plywood Base (Right).

b. Container and Base
Assembled, Ready for Explosive
Filler.

3. DETAILS OF TEST

3.1 (U) Procedure

3.1.1 Emplacement. Each charge was emplaced in front of the tank track with 3 inches of soil cover (see Figures 2 a and 2 b). The lateral position of each charge was obtained by measuring the desired distance inward from an extended line coincidental with the outer edge of the JSIII track. After the charge was emplaced, the distance from its center to the desired longitudinal functioning position on the target tank was measured.

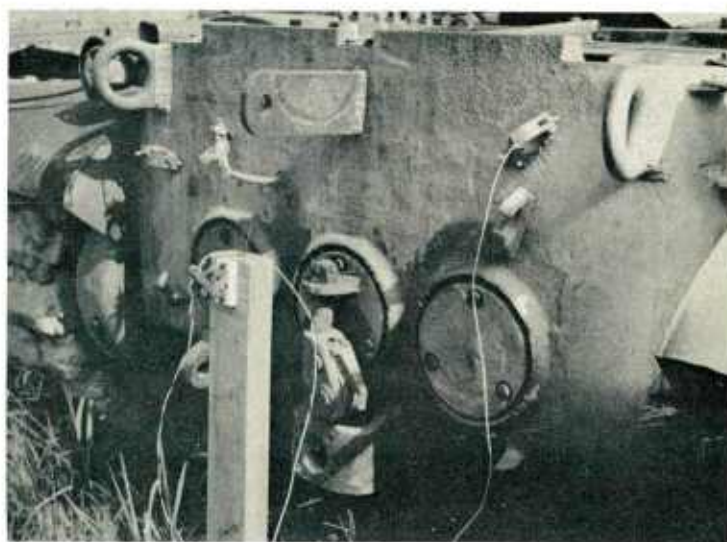
3.1.2 Detonation Location. Originally all the test charges were to be detonated under the centerline of the No. 1 road wheel. This location was chosen to make the test as realistic as possible, since pressure-fuzed mines normally function under the first road wheel. The first seven charges were detonated at this location. Six were under the lateral center of the track (hereafter referred to as position C) and one with the outer edge of charge tangent to outer edge of the track (hereafter referred to as position T). Because of the extensive damage to the suspension components and the shortage of parts to repair the damage, the test was continued under the centerline of No. 3 road wheel, at position C. Twenty-two charges were detonated in this location.



a. Charge Emplacement, Front View.



b. Charge Emplacement, Angle View.



c. Knife Switch, Showing Lanyard Attached to Rear of Target Tank.

Figure 2

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3.1.3 Functioning. The charges were initiated through a firing circuit which consisted of a 45-volt, dry-cell battery, a single-pole, single-throw knife switch, and an electric blasting cap. A lanyard was used to close the firing circuit. One end of the lanyard was fastened to the target tank. The other was attached to the knife switch (Figure 2 c). The knife switch was mounted on a pedestal to the rear of the tank. The measured distance from the emplaced charge to the desired functioning position on the tank was added to the length of the lanyard so the charge would detonate under the desired portion of the tank. Functioning was accomplished by towing the target tank slowly across the charge with another tank, except in one case: the target tank was winched slowly across Charge No. 4 with an M74 recovery vehicle. When the target tank traveled the measured distance, the knife switch was closed by the lanyard. This completed the firing circuit, initiating the charge.

3.2 (C) Results

3.2.1 Composition B Filler. Seven Composition B charges were detonated under the No. 1 road wheel. Charges 1 through 6 were detonated at position C, and No. 7 was detonated at position T. In three out of three trials at position C, approximately nine pounds of Composition B immobilized the tank. Tabulated results are contained in Table I. Detailed results are contained in the round-by-round data, Appendix B.

Eight Composition B charges were detonated under the No. 3 road wheel at position C. As shown in the tabulated results, Table II, three out of three charges of approximately five pounds each immobilized the tank. Detailed results are contained in the round-by-round data, Appendix B.

3.2.2 TNT Filler. Seven TNT charges were detonated under the No. 3 road wheel at position C. Three out of four charges of approximately five pounds each immobilized the tank. Tabulated results are in Table III. Detailed results are contained in the round-by-round data, Appendix B.

3.2.3 H6 Filler. Seven H6 charges were detonated under the No. 3 road wheel at position C. As shown in the tabulated results in Table IV, three out of three charges of approximately three pounds each immobilized the tank by severing the track. Detailed results are contained in the round-by-round data, Appendix B.

3.3 (C) Discussion of Results

Figures 3 through 10 show samples of the results obtained with Composition B and H6 charges during this test. The results of the TNT, except for two low-order detonations, were quite similar to those of Composition B. For this reason no photographs were taken of TNT results. Additional photographs are contained in Appendix C.

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Figure 3 - B30536: Front View of Left Side of U. S. M47 Tank, No. 30164309, After Detonation of Charge No. 2 Under Centerline of No. 1 Road Wheel, Under Lateral Center of the JSIII Track. Charge Consisted of 7.04 Pounds of Comp B Encased in an 8.5-Inch-Diameter, Cylindrical, 24-Gauge, Galvanized Container, Emplaced with 3-Inch Soil Cover.

Figure 3 shows the results of Charge No. 2. Note the separation of the arm from the tank hull. This separation caused the tank to be immobilized. However, the results here were not considered in the evaluation because the damage was believed to be cumulative.

Figure 4 shows the results of Charge No. 3. Note the damage to the road wheel and the track. The track was severed except for a portion of one hinge section. The tank was towed back and forth several times without difficulty or increase in track separation. This will give some indication of the toughness of the JSIII track.

Figure 5 shows the results of Charge No. 4. Note the severed track and damaged road wheel. The damage shown here is similar to that for Charge No. 5.

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Figure 4 - B31645: Closeup of Left Side of U.S. M47 Tank No. 30164309 After Detonation of Charge No. 3 Under Centerline of No. 1 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 8.05 Pounds of Comp B Encased in an 8.5-Inch-Diameter, Cylindrical, 24-Gauge, Galvanized Container Emplaced with 3-Inch Soil Cover.



Figure 5 - B32163: Closeup of Right Side of U.S. M47 Tank, No. 30164306 After Detonation of Charge No. 4 Under Centerline of No. 1 Road Wheel Under Lateral Center of the JSIII Track. Charge Consisted of 8.95 Pounds of Comp B Encased in an 8.5-Inch-Diameter, Cylindrical, 24-Gauge, Galvanized Container. Emplaced with 3-Inch Soil Cover.

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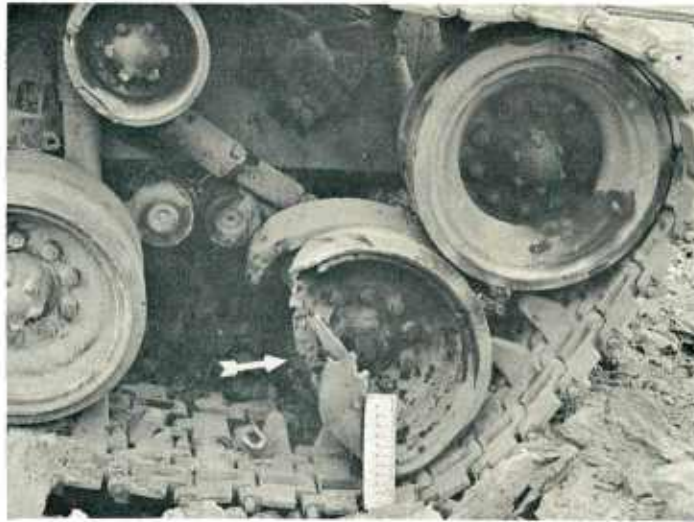


Figure 6 - 58P705: Closeup of Right Side of U.S. M47 Tank, No. 30164306, After Detonation of Charge No. 6 Under Centerline of No. 1 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 8.96 Pounds of Comp B Encased in an 8.5-Inch-Diameter, Cylindrical, 24-Gauge, Galvanized Container. Emplaced With 3-Inch Soil Cover.

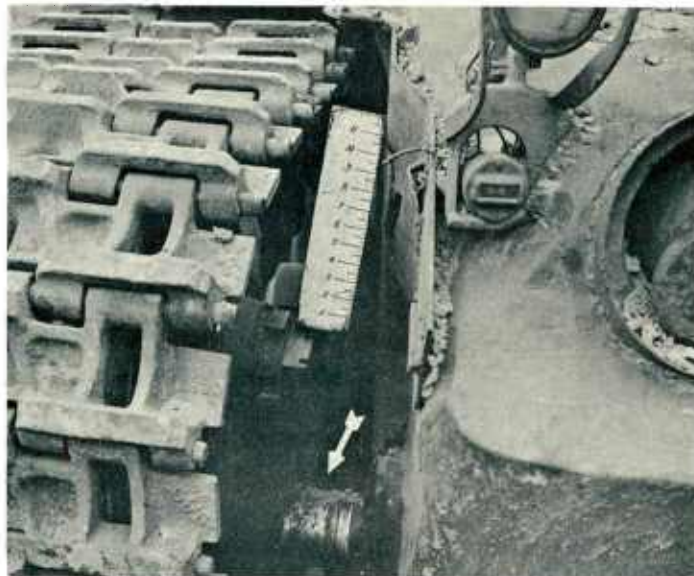


Figure 7 - 58P707: Front View Closeup of Right Side of U.S. M47 Tank, No. 30164306, After Detonation of Charge No. 6 Under Centerline of No. 1 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 8.96 Pounds of Comp B Encased in an 8.5-Inch-Diameter Cylindrical, 24-Gauge, Galvanized Container. Emplaced with 3-Inch Soil Cover.

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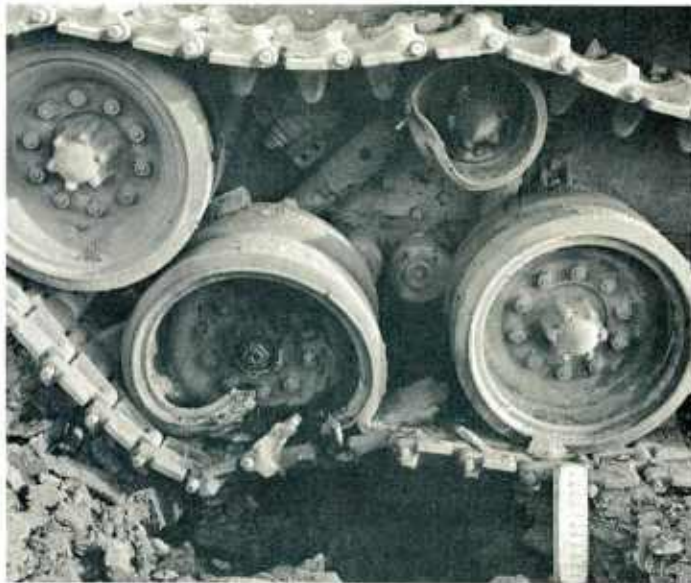


Figure 8 - 58P724: Closeup of Left Side of U.S. M47 Tank, No.30164309, After Detonation of Charge No. 7 Under Centerline of No. 1 Road Wheel With Outer Edge of Charge Tangent to Outer Edge of the JSIII Track. Charge consisted of 9.30 Pounds of Comp B Encased in an 8.5-Inch-Diameter, Cylindrical, 24-Gauge, Galvanized Container. Emplaced with 3-Inch Soil Cover.



Figure 9 - 59P196: Closeup of Left Side of U.S. M47 Tank, No.30164306, After Detonation of Charge No. 10 Under Centerline of No. 3 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 5.01 Pounds of Comp B Encased in an 8.5-Inch-Diameter, Cylindrical, 24-Gauge, Galvanized Container. Emplaced with 3-Inch Soil Cover.

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Figures 6 and 7 show some of the results of Charge No. 6. The condition of the front roadwheel in Figure 6 and other suspension damage not shown, is believed to be sufficient to immobilize the tank. The arm separation from the tank, shown in Figure 7, was disregarded because it might have been cumulative from Charge No. 4.

Figure 8 shows the result of Charge No. 7. This figure shows the decreased effectiveness of a charge at position T which would have severed the track at position C.

Figures 9 and 10 show results of Charges No. 10 and 22 respectively. The results shown in these two figures will tend to give a direct comparison of the minimum weight of Composition B and H6 required to immobilize the tank. The broken road wheel arm in Figure 10 cannot be explained. The arm was new, so the break could not have been the result of repeated shock loads.



Figure 10 - 59T1854: Closeup of Right Side of U.S. M47 Tank, No. 30164306 After Detonation of Charge No. 22 Under Centerline of No. 3 Road Wheel Under Lateral Center of the JSIII Tank Track. Charge Consisted of 2.98 Pounds of H6 Encased in an 8.5-Inch-Diameter, Cylindrical, 24-Gauge, Galvanized Container. Emplaced with 3-Inch Soil Cover.

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Table I. (C) Results of Composition B Under No. 1 Road Wheel

Charge No.	Charge Wt, lb ^a	Where Detonated ^b	Track Severed	Tank Immobilized	Remarks
1	9.54	C L	Yes	Yes	Excessive damage.
^c 2	7.04	C L	No	Yes	No. 1 arm broke loose from tank hull.
3	8.05	C L	No	No	Track almost severed.
4	8.95	C R	Yes	Yes	
5	9.03	C L	Yes	Yes	
6	8.96	C R	No	Yes	Suspension components severely damaged.
7	9.30	T L	No	No	Outer disk of No. 1 road wheel severely damaged and the ends of two track shoes blown off.

^aA 235-grain tetryl booster was used in each of the seven charges.

^bC - Center of charge under lateral center of track.

L - Left side of Tank, 90-mm Gun, M47, No. 30164309.

R - Right side of Tank, 90-mm Gun, M47, No. 30164306.

T - Outer edge of charge tangent to outer edge of track.

^cCharge No. 2 not considered in the evaluation. It is believed that the damage is cumulative.

Table II. (C) Results of Composition B Under No. 3 Road Wheel.

Charge No.	Charge Wt, lb ^a	Where Detonated ^b	Track Severed	Tank Immobilized	Remarks
8	7.94	C R	Yes	Yes	Excessive damage.
9	6.99	C L	Yes	Yes	Excessive damage.
10	5.01	C R	Yes	Yes	
11	5.07	C R	Yes	Yes	
12	4.07	C L	No	No	Little track damage. No.3 wheel severely damaged.
13	4.46	C L	No	No	Track broken half way across. No.3 road wheel destroyed.
18	4.96	C L	Yes	Yes	
27	4.57	C L	Yes	Yes	

^aA 235-grain tetryl booster was used in each of the eight charges.

^bC - Center of charge under lateral center of track.

R - Right side of Tank, 90-mm Gun, M47, No. 30164306.

L - Left side of Tank, 90-mm Gun, M47, No. 30164309.

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Initially 235 grains of tetryl were used as a booster to detonate the TNT charges. After two low-order functions, the tetryl was increased to 470 grains. Detonation results (Table III) indicate that 235 grains of tetryl were slightly insufficient for satisfactory initiation of the weights and configurations of TNT charges used in this test.

Table III. (C) Results of TNT Under No. 3 Road Wheel

Charge No.	Charge Wt, lb	Where Detonated ^a	Track Severed	Tank Immobilized	Tetryl Booster, grains	Remarks
14	5.04	C R	Yes	Yes	235	
b17	5.01	C L	No	No	235	Low-order function.
21	5.00	C L	No	No	235	Little track damage.
b23	5.48	C R	No	No	235	No. 3 wheel destroyed.
25	5.56	C L	Yes	Yes	470	Low-order function.
28	5.04	C R	Yes	Yes	470	Excessive damage.
29	4.91	C L	Yes	Yes	470	

^aC - Center of charge under lateral center of track.

R - Right side of tank, 90-mm Gun, M47, No. 30164306.

L - Left side of tank, 90-mm Gun, M47, No. 30164309.

^bResults of charges 17 and 23 were disregarded.

Table IV. (C) Results of H6 Under No. 3 Road Wheel

Charge No.	Charge Wt, lb ^a	Where Detonated ^b	Track Severed	Tank Immobilized	Remarks
15	4.57	C L	Yes	Yes	Excessive damage.
16	3.59	C R	Yes	Yes	Excessive damage.
19	2.55	C R	No	No	Little damage to track and suspension components.
20	3.07	C L	Yes	Yes	
22	2.98	C R	Yes	Yes	
24	2.97	C R	Yes	Yes	
26	2.50	C R	No	No	Little damage to track and suspension components.

^aA 235-grain tetryl booster was used in each of the seven charges.

^bC - Center of charge under lateral center of track.

L - Left side of Tank, 90-mm Gun, M47, No. 30164309.

R - Right side of Tank, 90-mm Gun, M47, No. 30164306.

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4. (C) SUMMARY

4.1 Under No. 1 Road Wheel at Position C

Nine pounds of Composition B immobilized the tank in three out of three trials. One trial at 8 pounds failed to immobilize the tank.

4.2 Under No. 3 Road Wheel at Position C

Five pounds of Composition B immobilized the tank three times out of three trials. Four and one-half pounds immobilized the tank one time out of two trials.

Five pounds of TNT immobilized the tank in three out of four trials. Two of the immobilizing charges were boosted with 470 grains of tetryl. The other two were boosted with only 235 grains. Two low-order functions were obtained with the 235-grain tetryl boosters.

Three pounds of H6 immobilized the tank three times out of three trials. Two and one-half pounds failed to immobilize the tank in two trials.

NOTE: Weights given here are approximate. Exact weights are shown in Tables I through IV.

5. (C) CONCLUSIONS

Under the conditions of this test it is concluded that:

- a. There is no significant difference between TNT and Composition B provided the TNT is properly boosted.
- b. Three pounds of H6 is approximately equivalent to five pounds of Composition B.

6. (U) RECOMMENDATIONS

It is recommended that:

- a. The investigation of TNT be discontinued.
- b. The relative effectiveness of Composition B and H6 be investigated further.

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SUBMITTED:

Orion L. Rogers

ORION L. ROGERS
Project Engineer

REVIEWED:

Arthur Fillersdorf

ARTHUR FILLERSDORF
Chief
Terminal Effects Branch

Claude E. Brown

CLAUDE E. BROWN
Chief, Infantry and
Aircraft Weapons Division

APPROVED:

H. A. Noble

H. A. NOBLE
Assistant Deputy Director
for Engineering Testing
Development and Proof Services

APPENDICES

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APPENDIX A
Correspondence

COMMUNICATION CENTER

27 NOV 29 21 57

DATE-----2 Dec 57

ACTION-----D&PS

PROVING GROUND
NEWLAND

act dupd

cy sent to 2nd/10-11

cl. 2nd/10-11
Ex. 2nd/10-11
Mr. H. H. H. H.
of 1st/10-11
terminal effects
branch

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RR RUETGH

DE RUEPC 45L

R 292030Z

FM COFORD DA WASHDC

TO CG ABERDEEN PG MD

DA GRNC

BT

FOR ORDBG-DP-TI MR J C WHITE FROM ORDTS

KOWALESKI TT ORD17783

1. REURTT 16296 DTD 21 NOV 57. APG MINE DEMONSRATION FILM
NO U479 WILL BE RETURNED WITHIN TWO WEEKS.

2. AUTHROTY FOR CONDUCT OF TESTS OF TNT, COMP B AND H6
CONTAINED IN CHANGE NO 3, FY 57 OPERATING SCHEDULE, DTD 13 MAR 57,
CONFIRMED BY THIS TELETYPE.

3. APPROVAL OF TPR TF112 AND AMENDEMENT THERETO FORWARDED YOUR
PROVING GROUND BY 1ST INDORSEMENT DTD 17 SEP 57 (FILE 00/7S-9683)

BT

CFN ORD17783 16296 21 57 U479 2 H6 3 57 13 57 TF112 17 57

00/7S-9683

29/2059Z

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U. S. ARMY ORDNANCE
XXXXXXXXXXXXXXXXXXXX

Mr White/vm/22255

DEVELOPMENT AND PROOF SERVICES

MAR 21 1957

ORDEG-DP-TR C) 471.86/7. (57)

SUBJECT: Effectiveness of TNT, Composition B and H6 as Mine Fillers (U)

TO: Chief of Ordnance, U. S. Army
Washington 25, D. C.

ATTENTION: ORDTA

1. The purpose of this correspondence is to outline a program to determine the relative effectiveness of TNT, Composition B and H6, an aluminized explosive, for use in blast-type antitank mines. This program was discussed in telephone conversations of 27 February and 7 March between Mr. J. Kowaleski, ORDTA, and Mr. J. C. White, Armor and Ammunition Effectiveness Division, Development and Proof Services.

2. Since track on a tank is the major target for pressure-fuzed blast-type mines, the Development and Proof Services recommends Soviet JS III tank track mounted on a medium (90mm gun) tank as the target for such evaluations. Accordingly, a 90mm gun tank, M47, in operating condition, is being modified to accept the simulated JS III track, presently available at this station. In addition to its potential value as a mine evaluation facility, the modified tank will be used by the Diamond Ordnance Fuze Laboratory to determine the effect of the non-magnetic JS III track on the tank magnetic signature. It will also be used in connection with the M15 and M19 pressure signature program.

3. In the inclosed program for determining the relative effectiveness of TNT, Composition B and H6 as blast mine fillers, Composition B has been adopted as the standard against which the other two explosives will be compared. In general, complete severance of the track will be the criterion upon which the determination of relative effectiveness will be based. If the detonation of a particular charge does not sever the track, operation of the vehicle will be attempted to determine whether complete track failure is actually required to immobilize the vehicle. In the interests of economy, the number of variables has been minimized. All charges will be emplaced under the axis of the number one roadwheel and covered with three inches of earth.

4. Estimated cost of the inclosed explosive evaluation program is \$18,000. It is recommended that these funds be forwarded expeditiously to this station.

A-2

R. P. WILSON
Col, Ord Corps
Director
Development & Proof Services

1 Incl

1. Test Plan (in dupe)

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REGRAING DATA CANNOT BE PREDETERMINED

D - 0433

Comeback Copy, Term Effects, Armor & Ammo Eff.

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TEST PLAN FOR DETERMINATION OF THE
RELATIVE EFFECTIVENESS OF TNT, COMPOSITION B AND H6 AS A
BLAST MINE FILLER

General:

Nominal height of all charges - 3.5 inches (slight variations in height will be permitted to compensate for differences in explosive density).

Diameter of all charges of any given weight will be the same.

Burial depth for all charges will be three inches.

All charges will be emplaced under the axis of number one roadwheel.

Damage caused by each detonation will be repaired as completely as possible before detonation of subsequent charges.

Charge weights will normally be varied by one-pound increments.

Phase I

A. Relative effectiveness when center of charge is under lateral center of track.

1. Determine minimum weight of Composition B required to sever track (maximum of eight charges).

2. Adjust charge weights of TNT and H6, as required, to determine minimum weight of each to sever track (maximum of five charges of each).

B. Determination of minimum charge weights as a function of displacement of charge.

1. Detonate minimum charge of Composition B (determined in A1) with outer edge of charge tangent to outboard edge of track (two charges).

a. If B1 does not sever track establish new minimum weights to break track at tangent position (outer edge of charge tangent to outboard edge of track) for Composition B, TNT and H6 following general procedure of A1 and 2 (ten charges).

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b. If B1 severs track:

- (1) Detonate same weight (from A1) of Composition B at positions two inches further outboard until track is no longer broken. Detonate two confirming charges of Composition B (four charges).
- (2) Determine if minimum charge weight of TNT and M6 required for position B1b(1) is the same as for center of track. If not, adjust charge weights for new minimum at position of B1b(1) (six charges).

Phase II

Repeat Phase 1A with center of charge under outboard edge of track (fifteen charges).

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APPENDIX B

Round-by-Round Data

CHARGE NO. 1

18 June 1958

Explosive: 9.54 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 2.75 inches thick.

Initiation: Engineer's Special with a 235-grain tetryl booster.

Time detonated: 1323 hours.

Ambient temperature: 72°F.

Relative humidity: 69%.

Soil conditions: Three inches of dry hard topsoil with dry hard clay underneath.

Support vehicle: Tank, 90-mm Gun, M47, No. 30186486 used to tow target tank over the charge.

Detonated: Under the centerline of No. 1 road wheel under the lateral center of the simulated JSIII tank track mounted on the left side of U.S. Tank, 90-mm Gun, M47, No. 30164309. Charge emplaced with 3-inch soil cover.

Results (C): Track severed over charge. One shoe broken in half. Two other shoes badly bent and broken at hinge sections. Six other shoes slightly bent with cracks at hinge sections. No. 1 road wheel destroyed but not blown off. No. 2 road wheel blown off, hub and bearings were destroyed. No. 1 bumper spring broken, separated from spring housing which was sheared from the tank hull. No. 2 bumper spring broken. No. 1 shock absorber bracket sheared from tank hull. No. 2 shock absorber destroyed, upper bracket sheared from tank hull. Bearings in idler wheel were crushed. The results are shown in APG photographs numbered B30399 and B30400 in Appendix C.

Opinion (C): Tank immobilized.

CHARGE NO. 2

1 July 1958

Explosive: 7.04 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 2.05 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 1305 hours.

Ambient temperature: 85°F.

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Relative humidity: 60%.

Soil conditions: Three inches of damp topsoil with damp hard clay underneath.

Support vehicle: Same as Charge No. 1.

Detonated: Same as Charge No. 1.

Results (C): Track not severed. One track shoe badly bent and cracked across the center and at the hinge sections. Four other shoes slightly bent and cracked in several of the hinge sections. No. 1 road wheel destroyed. No. 1 bumper spring broken. No. 1 bumper spring housing sheared from tank hull. Front road wheel arm pulled partway out of hull (retainer remained in place). The results are shown in AFG photographs numbered B30534 and B30535 in Appendix C, and B30536 in Figure 3.

Opinion (C): Tank immobilized because of No. 1 wheel and arm damage.

CHARGE NO. 3

3 September 1958

Explosive: 8.05 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 2.30 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 1358 hours.

Ambient temperature: 73°F.

Relative humidity: 57%.

Soil conditions: Damp clay.

Support vehicle: Same as Charge No. 1.

Detonated: Same as Charge No. 1.

Results (C): Track severed except for a portion of one hinge section on the inboard side of the track. Two track shoes badly bent, broken in half at the center, broken at the hinge sections, and the centerguide broken in both. One other shoe badly bent with breaks at the hinge sections. Six other shoes slightly bent with cracks at the hinge sections. No. 1 road wheel destroyed, outer disk blown off a distance of approximately 150 feet. The results are shown in AFG photographs B31645 in Figure 4, and B31646 in Appendix C.

The tank was towed back and forth a number of times. The damaged No. 1 wheel did not seem to interfere. The damaged portion of the track passed over the sprocket repeatedly without difficulty. After the towing, the damaged portion of the track appeared to be the same as before.

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Opinion (C): Tank was not completely immobilized, but the speed, mobility, and range would be considerably reduced.

CHARGE NO. 4

26 September 1958

Explosive: 8.95 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 2.60 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 1103 hours.

Ambient temperature: 77°F.

Relative humidity: 67%.

Soil conditions: Two inches of dry topsoil with damp hard clay underneath.

Supporting vehicle: Vehicle, Recovery, M74, No. 30140613 used to winch target tank over the charge.

Detonated: Under the centerline of No. 1 road wheel under the lateral center of the simulated JSIII tank track mounted on the right side of U.S. Tank, 90-mm Gun, M47, No. 30164306. Charge emplaced with 3 inches of soil cover.

Results (C): Track severed. Blew most of one track shoe out. Broke another in half. Three others slightly bent and cracked at the hinge sections. Destroyed No. 1 road wheel. Broke No. 1 bumper spring. Destroyed No. 2 shock absorber. The results are shown in AFG photographs B32163 in Figure 5, and B32164 in Appendix C.

Opinion (C): Tank immobilized.

CHARGE NO. 5

12 December 1958

Explosive: 9.03 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 2.60 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 1121 hours.

Ambient temperature: 26°F.

Relative humidity: 37%.

Soil conditions: Clay, frozen to a depth of approximately eight inches.

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Support vehicle: Tank, Heavy, 90-mm Gun, M48, No. 9A6119 used to tow target tank over charge.

Detonated: Same as Charge No. 1.

Results (C): Track severed. Two track shoes badly bent, blown in half with part of both centerguides blown out. Four other track shoes slightly bent with cracks in the hinge sections. No. 1 road wheel destroyed. No. 1 and No. 2 shock absorbers destroyed. No. 1 bumper spring housing almost sheared from tank hull. Front road wheel arm badly damaged, shackle blown loose from arm. Front road wheel arm pulled from tank hull. The results are shown in APG photographs numbered 58T596, 58T597, and 58T598, in Appendix C.

Opinion (C): Tank immobilized.

CHARGE NO. 6

17 December 1958

Explosive: 8.96 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 2.60 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 1124 hours.

Ambient temperature: 38°F.

Relative humidity: 53%.

Soil conditions: Clay, frozen to an approximate depth of nine inches.

Support vehicle: Same as Shot No. 5.

Detonated: Same as Charge No. 4.

Results (C): Track not severed. Two track shoes badly bent and broken, with the centerguide blown out of one and cracked in the other. Two other track shoes slightly bent and cracked at the hinge sections. No. 1 road wheel destroyed. Front road wheel arm pulled out of the retainer approximately six inches (retainer remained in place). Shackle blown off front arm, shackle bushing destroyed. No. 2 shock absorber destroyed, upper bracket sheared from tank hull. Results are shown in APG photographs numbered 58P705 and 58P707, in Figures 6 and 7, and 58P706 in Appendix C.

Opinion (C): Tank was immobilized because the front road wheel arm pulled out of the hull, and the No. 1 road wheel was severely damaged.

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CHARGE NO. 7

18 December 1958

Explosive: 9.30 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 2.75 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 1048 hours.

Ambient temperature: 38°F.

Relative humidity: 41%.

Soil conditions: Clay, frozen to a depth of approximately nine inches.

Support vehicle: Same as Charge No. 5.

Detonated: Under centerline of No. 1 road wheel with outer edge of charge tangent to outer edge of the simulated JSIII tank track mounted on the left side of U.S. Tank, 90-mm Gun, M47 No. 30164309. Charge emplaced with 3-inch soil cover.

Results (C): Track not severed. Two track shoes badly bent with outboard ends blown off. One other shoe badly bent and cracked at the hinge sections. Two other shoes slightly bent with cracks at the hinge sections. No. 1 road wheel badly bent. Results are shown in AFG photograph No. 58P724 in Figure 8.

After the charge was detonated, the target tank was towed back and forth a distance of approximately 250 feet. The No. 1 road wheel turned very little but it did not lock the track. The damaged track passed over the sprocket with little difficulty.

Opinion (C): Tank could continue on mission with decreased mobility.

CHARGE NO. 8

9 February 1959

Explosive: 7.94 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 2.3 inches thick.

Initiation: Same as Charge No. 1.

Time of detonation: 1020 hours.

Ambient temperature: 28°F.

Relative humidity: 76%.

Soil conditions: Two inches of very wet topsoil. Next, two inches of frozen clay with wet clay underneath.

Support vehicle: Same as Charge No. 5.

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Detonated: Under the centerline of No. 3 road wheel under the lateral center of the simulated JSIII tank track mounted on the right side of U.S. Tank, 90-mm Gun, M47, No. 30164306. Charge emplaced with 3-inch soil cover.

Results (C): Track severed. Three track shoes were blown out of the track, two of them were broken in half, the other was badly bent. Two other shoes were slightly bent. No. 3 road wheel destroyed. Numbers 3 and 4 bumper spring assembly sheared from hull. The results are shown in AFG photographs No. 59T577 and 59T578, in Appendix C.

Opinion(C): Tank immobilized.

CHARGE NO. 9

11 February 1959

Explosive: 6.99 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 2.0 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 1035 hours.

Ambient temperature: 40°F.

Relative humidity: 35%.

Soil conditions: Three inches of wet topsoil. Wet clay underneath.

Support vehicle: Same as Charge No. 5.

Detonated: Under the centerline of No. 3 road wheel under the lateral center of the simulated JSIII tank track mounted on the left side of U.S. Tank, 90-mm Gun, M47, No. 30164309. Charge emplaced with 3-inch soil cover.

Results (C): Track severed. Two shoes badly bent and broken at the hinge sections. Three others slightly bent and cracked at the hinge sections. Numbers 3 and 4 road wheel arm support assemblies blown loose from hull. No. 3 was still hanging by the studs but No. 4 was completely off. No. 3 road wheel destroyed. No. 4 shock absorber destroyed. Results are shown in AFG photographs No. 59T613 and 59T614 in Appendix C.

Opinion(C): Tank immobilized.

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CHARGE NO. 10

5 March 1959

Explosive: 5.01 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 1.5 inches thick.

Initiation: Same as No. 1.

Time detonated: 1340.

Ambient temperature: 46°F.

Relative humidity: 41%.

Soil conditions: Three inches of damp topsoil. Hard damp clay underneath.

Support vehicle: Same as Charge No. 5.

Detonated: Same as Charge No. 8.

Results (C): Track severed. One track shoe blown in half, one other badly bent and broken at the hinge sections, and three others slightly bent and cracked at the hinge sections. No. 3 road wheel destroyed. No. 3 bumper spring assembly sheared from hull, spring and housing separated. No. 4 road wheel slightly bent. Results are shown in AFG photographs No. 59F182 in Appendix C, and 59F196 in Figure 9.

Opinion (C): Tank immobilized.

CHARGE NO. 11

11 March 1959

Explosive: 5.07 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 1.5 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 1409 hours.

Ambient temperature: 39°F.

Relative humidity: 46%.

Soil conditions: Three inches of damp topsoil with damp hard clay underneath.

Support vehicle: Same as Charge No. 5.

Detonated: Same as Charge No. 8.

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Results (C): Track severed. Two track shoes badly bent and broken at hinge sections. Three other shoes slightly bent and cracked at the hinge sections. No. 3 road wheel destroyed. No. 3 road wheel arm and wheel spindle distorted. No. 3 bumper spring broken.

Opinion (C): Tank immobilized.

CHARGE NO. 12

9 April 1959

Explosive: 4.07 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 1.25 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 0953 hours.

Ambient temperature: 74°F.

Relative humidity: 53%.

Soil conditions: Three inches of damp topsoil with hard damp clay underneath.

Support vehicle: Tank, Heavy, 90-mm Gun, M48, No. 9A6120 used to tow target tank over charge.

Detonated: Same as Charge No. 9.

Results (C): Track not severed. One track shoe badly bent and almost broken in half. Two other shoes slightly bent. No. 3 road wheel badly damaged.

The tank was towed back and forth after the detonation. No. 3 road wheel would not turn, but this did not seem to appreciably affect the tank's movements.

Opinion (C): Tank could continue on mission with some loss of mobility.

CHARGE NO. 13

23 April 1959

Explosive: 4.46 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 1.4 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 1005 hours.

Ambient temperature: 54°F.

Relative humidity: 50%.

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Soil conditions: Three inches of damp topsoil with hard dry clay underneath.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 9.

Results (C): Track not severed. Broken approximately halfway across. One track shoe badly bent and broken. Two other shoes slightly bent. No. 3 road wheel destroyed.

Opinion (C): Tank could continue on course with some loss of mobility.

CHARGE NO. 14

23 April 1959

Explosive: 5.04 pounds of TNT cast into a cylinder 8.5 inches in diameter by 1.64 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 1035 hours.

Ambient temperature: 54°F.

Relative humidity: 50%.

Soil conditions: Three inches of damp topsoil, hard dry clay underneath.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 8.

Results (C): Track severed. Two shoes slightly bent, one broken at hinge sections, the other cracked at the hinge sections. No. 3 road wheel slightly damaged.

The track was very tight. For this charge, there were only 78 shoes in the track. For all other shots there were 79 shoes. It is believed that the tautness of the track caused it to break.

Opinion(C): Tank immobilized.

CHARGE NO. 15

30 April 1959

Explosive: 4.57 pounds of H6 cast into a cylinder 8.5 inches in diameter by 1.3 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 0940 hours.

Ambient temperature: 54°F.

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Relative humidity: 87%.

Soil conditions: Three inches of damp topsoil with hard damp clay underneath.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 9.

Results (C): Track severed. Three shoes badly bent, one of them broken in half. Three others slightly bent with cracks at the hinge sections. No. 3 road wheel destroyed. Permanent set in torsion bar of approximately 30 degrees.

Opinion (C): Tank immobilized.

CHARGE NO. 16

4 May 1959

Explosive: 3.59 pounds of H6 cast into a cylinder 8.5 inches in diameter by 1.0 inch in thickness.

Initiation: Same as No. 1.

Time detonated: 1002 hours.

Ambient temperature: 65°F.

Relative humidity: 36%.

Soil conditions: Three inches of dry topsoil with dry hard clay underneath.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 8.

Results (C): Severed track. Two track shoes badly bent and broken at the hinge sections, one of them broken in half. Three others slightly bent with some cracks in hinge sections. No. 3 road wheel destroyed. Results shown in APG photographs No. 59T1728 and 59T1729 in Appendix C.

Opinion (C): Tank immobilized.

CHARGE NO. 17

5 May 1959

Explosive: 5.01 pounds of TNT cast into a cylinder 8.5 inches in diameter by 1.64 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 1535 hours.

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Ambient temperature: 71°F.

Relative humidity: 44%.

Soil conditions: Three inches of dry topsoil with hard dry clay underneath.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 9.

Results (C): No damage to track or tank components. The charge functioned low order. It was estimated that ten per cent of the TNT burned on initiation. After the target tank was towed away from the charge, it was destroyed in place.

CHARGE NO. 18

6 May 1959

Explosive: 4.96 pounds Composition B cast into a cylinder 8.5 inches in diameter by 1.5 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 1040 hours.

Ambient temperature: 65°F.

Relative humidity: 68%.

Soil conditions: Three inches of dry topsoil with dry hard clay underneath.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 9.

Results (C): Track severed. One track shoe broken in half, badly bent and broken at hinge sections. Three other shoes slightly bent with cracks at some of the hinge sections. Track pin broken in half directly over the charge. No. 3 road wheel destroyed. Permanent set in torsion bar approximately 20 degrees.

Opinion (C): Tank immobilized.

CHARGE NO. 19

7 May 1959

Explosive: 2.55 pounds of H6 cast into a cylinder 8.5 inches in diameter by 0.72 inch thick.

Initiation: Same as Charge No. 1.

Time detonated: 1402 hours.

Ambient temperature: 85°F.

Relative humidity: 48%.

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Soil conditions: Three inches of dry topsoil with hard dry clay underneath.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 8.

Results (C): Track not severed. Two shoes badly bent, some breaks at the hinge sections, with the centerguide blown out of one. Two other shoes slightly bent, with some cracks at the hinge sections. No. 3 road wheel slightly damaged; the road wheel disks had to be replaced.

Opinion (C): Tank could continue on mission with little or no loss of mobility.

CHARGE NO. 20

8 May 1959

Explosive: 3.07 pounds of H6 cast into a cylinder 8.5 inches in diameter by 0.84 inch thick.

Initiation: Same as Charge No. 1.

Time detonated: 1410 hours.

Ambient temperature: 68°F.

Relative humidity: 46%.

Soil conditions: Three inches of dry topsoil with hard dry clay underneath.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 9.

Results (C): Track severed. Two track shoes badly bent, breaks at the hinge sections, with centerguides broken out of both. Two other shoes slightly bent with cracks at hinge sections. No. 3 road wheel destroyed.

Opinion (C): Tank immobilized.

CHARGE NO. 21

12 May 1959

Explosive: 5.00 pounds of TNT cast into a cylinder 8.5 inches in diameter by 1.64 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 0946 hours.

Ambient temperature: 73°F.

Relative humidity: 78%.

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Soil conditions: Three inches of hard dry topsoil with hard dry clay underneath.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 9.

Results (C): Track not severed. Two track shoes badly bent and broken at the hinge sections, with the centerguide blown from one. Two other shoes slightly bent with cracks at the hinge sections. No. 3 road wheel destroyed.

Opinion (C): Tank could continue mission with some loss of speed and mobility.

CHARGE NO. 22

14 May 1959

Explosive: 2.98 pounds of H6 cast into a cylinder 8.5 inches in diameter by 0.84 inch thick

Initiation: Same as Charge No. 1.

Time detonated: 1350 hours.

Ambient temperature: 64°F.

Relative humidity: 40%.

Soil conditions: Three inches of wet topsoil with hard damp clay underneath.

Support vehicle: Same as Charge No. 12.

Detonation: Same as Charge No. 8.

Results (C): Track severed. Two track shoes badly bent and broken, with centerguide blown from one. Three other shoes slightly bent with cracks at hinge sections. No. 3 road wheel destroyed, blown off the spindle. No. 3 road wheel arm broken off approximately six inches from the torsion bar. Results are shown in AFG photographs No. 59TL854 in Figure 10, and 59TL855 in Appendix C.

Opinion (C): Tank immobilized.

CHARGE NO. 23

20 May 1959

Explosive: 5.48 pounds of TNT cast into a cylinder 8.5 inches in diameter by 1.8 inches thick.

Initiation: Same as Charge No. 1.

Time of detonation: 0954 hours.

Ambient temperature: 71°F

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Relative humidity: 86%

Soil conditions: Hard damp clay.

Support vehicle: Same as Charge No. 12.

Detonation: Same as Charge No. 8.

Results (C): Charge functioned low order. Estimated that 90% of the explosive burned. No damage to tank track. No. 3 road wheel slightly damaged.

Opinion (C): Tank could have continued on its mission with no loss of speed or mobility.

CHARGE NO. 24

20 May 1959

Explosive: 2.97 pounds of H6 cast into a cylinder 8.5 inches in diameter by 0.84 inch thick.

Initiation: Same as Charge No. 1.

Time detonated: 1452 hours.

Ambient temperature: 81°F.

Relative humidity: 67%.

Soil conditions: Hard dry clay.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 8.

Results (C): Severed track. Three track shoes badly bent and broken at hinge sections. One other shoe slightly bent and cracked at the hinge sections. No. 3 road wheel destroyed.

Opinion (C): Tank immobilized.

CHARGE NO. 25

26 May 1959

Explosive: 5.56 pounds of TNT cast into a cylinder 8.5 inches in diameter by 1.8 inches thick.

Initiation: Engineer's Special with two 235-grain teteryl boosters, total of 470 grains.

Time detonated: 1016 hours.

Ambient temperature: 64°F.

Relative humidity: 71%.

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Soil conditions: Hard dry clay.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 9.

Results (C): Track severed. Three track shoes badly bent: one of them was broken in half and broken at the hinge sections, the other two were cracked at the hinge sections. Three other shoes were slightly bent and cracked at the hinge sections. No. 3 road wheel destroyed; the torsion bar for this wheel was permanently set approximately 25°.

Opinion (C): Tank immobilized.

CHARGE NO. 26

26 May 1959

Explosive: 2.50 pounds of H6 cast into a cylinder 8.5 inches in diameter by 0.72 inch thick.

Initiation: Same as Charge No. 1.

Time detonated: 1040 hours.

Ambient temperature: 65°F.

Relative humidity: 68%.

Soil conditions: Hard dry clay.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 8.

Results (C): Track not severed. Six shoes slightly bent and/or cracked at hinge sections. No. 3 road wheel slightly bent.

Opinion (C): Tank could continue on mission without loss of speed or mobility.

CHARGE NO. 27

28 May 1959

Explosive: 4.57 pounds of Composition B cast into a cylinder 8.5 inches in diameter by 1.38 inches thick.

Initiation: Same as Charge No. 1.

Time detonated: 0940 hours.

Ambient temperature: 80°F.

Relative humidity: 69%.

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Soil conditions: Two inches of dry topsoil with hard dry clay underneath.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 9.

Results (C): Severed track. Three track shoes badly bent and broken at the hinge sections. Centerguide blown out of one and cracked in another. Four other shoes slightly bent and cracked at the hinge sections. No. 3 road wheel destroyed, blown off a distance approximately 30 feet.

Opinion (C): Tank immobilized.

CHARGE NO. 28

1 June 1959

Explosive: 5.04 pounds of TNT cast into a cylinder 8.5 inches in diameter by 1.64 inches thick.

Initiation: Same as Charge No. 25.

Time detonated: 1426 hours.

Ambient temperature: 64°F.

Relative humidity: 86%.

Soil conditions: Hard dry clay.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 8.

Results (C): Track severed. Two track shoes badly bent and broken at the hinge sections with the centerguide blown out of one. Three other shoes slightly bent with cracks at the hinge sections. No. 3 road wheel destroyed.

Opinion (C): Tank immobilized.

CHARGE NO. 29

2 June 1959

Explosive: 4.91 pounds of TNT cast into a cylinder 8.5 inches in diameter by 1.64 inches thick.

Initiation: Same as Charge No. 25.

Time detonated: 1341 hours.

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Ambient temperature: 69°F.

Relative humidity: 96%.

Soil conditions: Three-inch dry topsoil, wet on top by recent shower,
with hard dry clay underneath.

Support vehicle: Same as Charge No. 12.

Detonated: Same as Charge No. 9.

Results (C): Track severed. Two track shoes badly bent and broken at the hinge sections with centerguide blown from one. Four other shoes slightly bent with cracks at hinge sections. No. 3 road wheel destroyed and blown off.

Opinion (C): Tank immobilized.

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APPENDIX C



B30399: Close-up of Left Side of U. S., M47 Tank, No. 30164309, After Detonation of Charge No. 1 Under Centerline of No. 1 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 9.54 Pounds of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-inch Soil Cover.

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B30400: General View of Left Side of U. S., M47 Tank, No. 30164309, After Detonation of Charge No. 1 Under Centerline of No. 1 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 9.54 Pounds of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-Inch Soil Cover.

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B30534: General View of Left Side of U. S. M47 Tank, No. 30164309, After Detonation of Charge No. 2 Under Centerline of No. 1 Road Wheel, Under Lateral Center of the JSIII Track. Charge Consisted of 7.04 Pounds of Comp E Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container Emplaced with 3-Inch Soil Cover.

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B30535: Close-up of Left Side of U. S. M47 Tank, No. 30164309, After Detonation of Charge No. 2 Under Centerline of No. 1 Road Wheel, Under Lateral Center of the JSIII Track. Charge Consisted of 7.04 Pounds of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container, Emplaced with 3-Inch Soil Cover.

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B31646: General View of Left Side of U. S. M47 Tank, No. 30164309 After Detonation of Charge No. 3 Under Centerline of No. 1 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 8.05 Pounds of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container Emplaced with 3-Inch Soil Cover.

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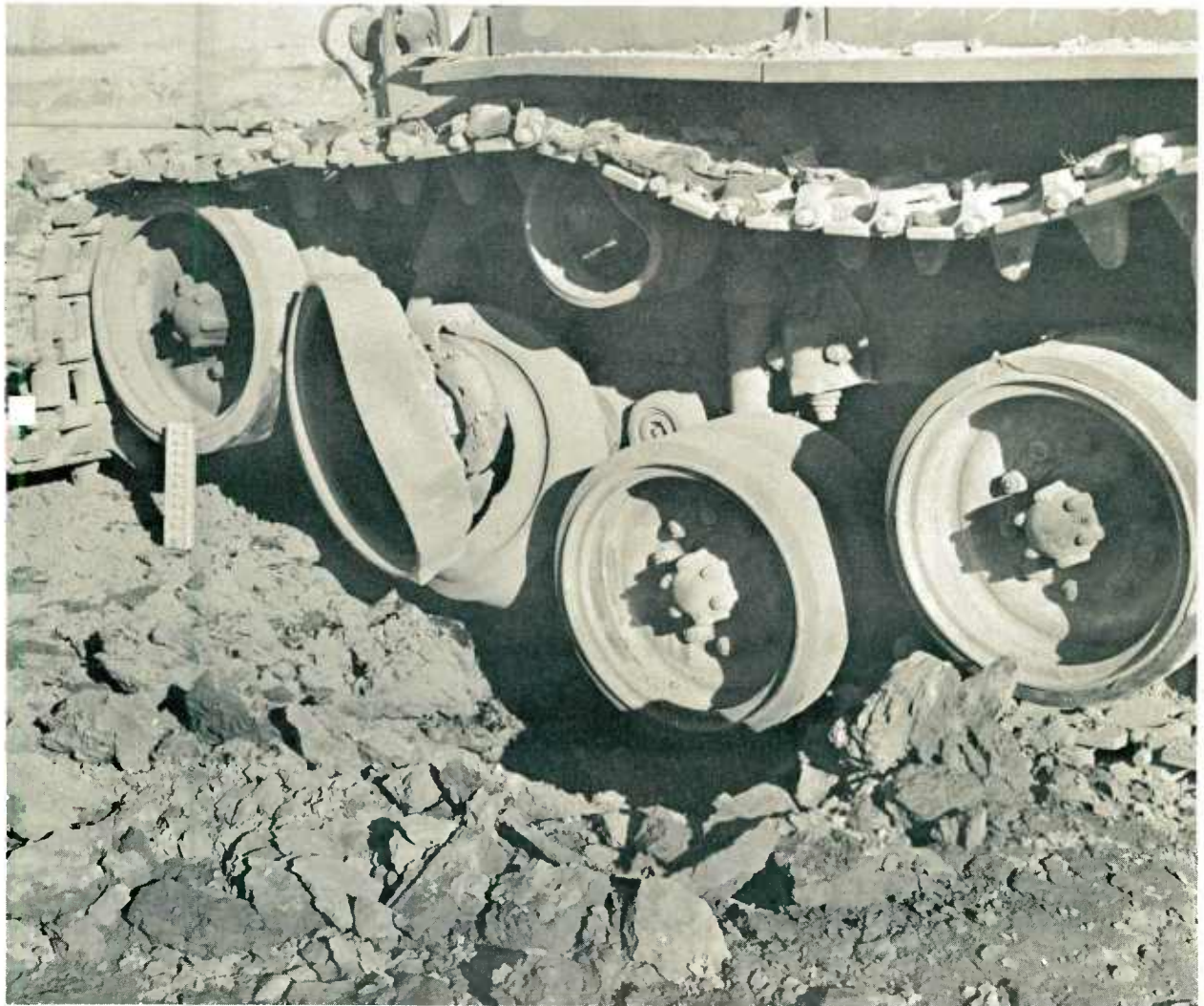
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B32164: General View of U. S. M47 Tank, No. 30164306 After Detonation of Charge No. 4 Under Centerline of No. 1 Road Wheel Under Lateral Center of JSIII Track. Charge Consisted of 8.95 pounds of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-Inch Soil Cover.

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58T596: Close-up of Left Side of U. S. M47 Tank, No. 30164309, After Detonation of Charge No. 5 Under Centerline of No. 1 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 9.03 Pounds of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-Inch Soil Cover.

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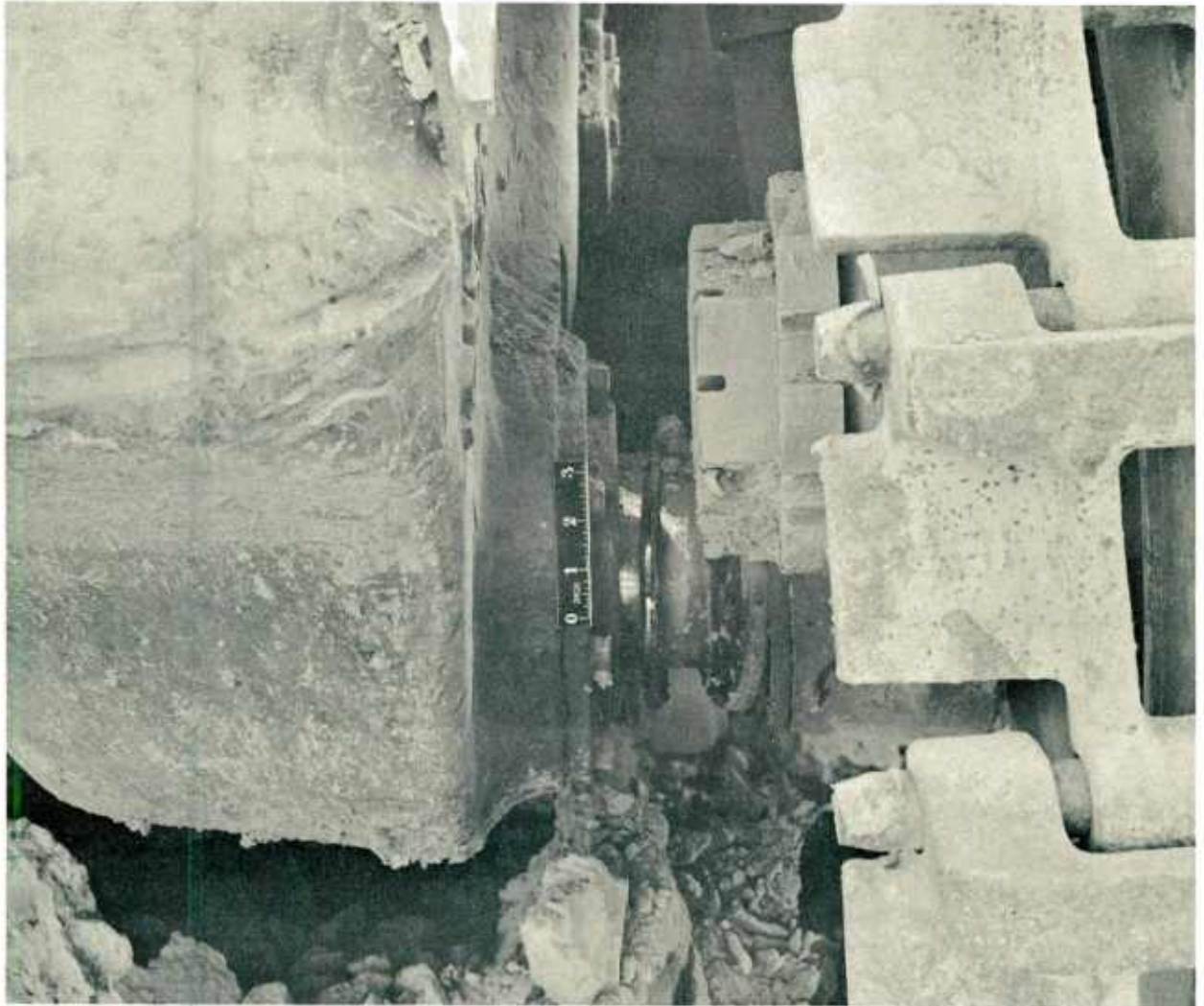
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58T597: General View of Left Side of U. S. M47 Tank, No. 30164309, After Detonation of Charge No. 5 Under Centerline of No. 1 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 9.03 Pounds of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-Inch Soil Cover.

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58T598: Close-up Front View of Left Side of U.S. M47 Tank, No.30164309, After Detonation of Charge No. 5 Under Centerline of No. 1 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 9.03 Pounds of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-Inch Soil Cover.

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58P706: General View of Right Side of U.S. M47 Tank, No. 30164306, After Detonation of Charge No. 6 Under Centerline of No. 1 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 8.96 Pounds of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-Inch Soil Cover.

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59T577: Close-up of Right Side of U.S. M47 Tank, No. 30164306 After Detonation of Charge No. 8 Under Centerline of No. 3 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 7.94 Pounds of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-Inch Soil Cover.

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59T578: General View of Right Side of U.S. M47 Tank, No. 30164306 After Detonation of Charge No. 8 Under Centerline of No. 3 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 7.94 Pounds of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-Inch Soil Cover.

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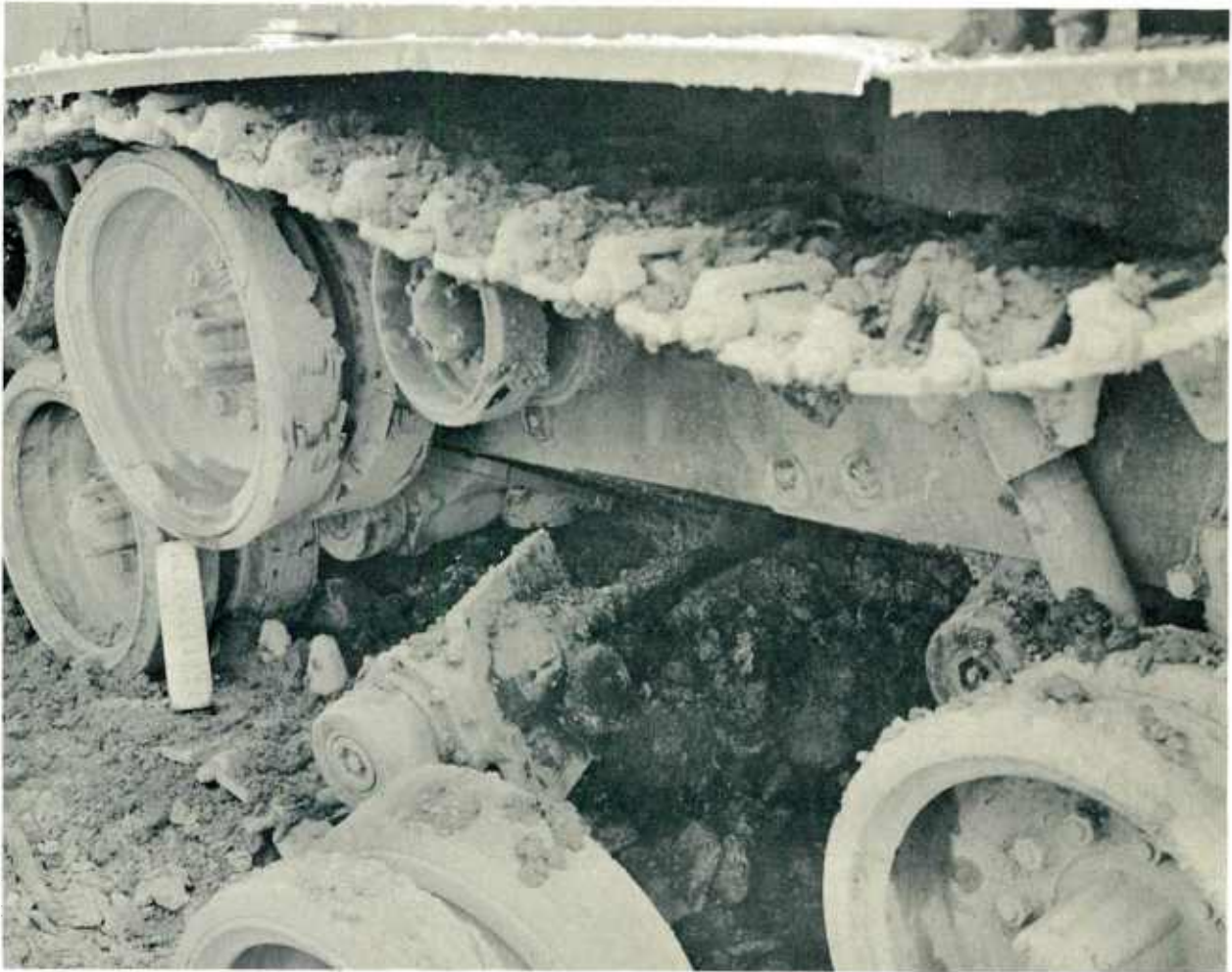
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59T613: General View of Left Side of U.S. M47 Tank, No. 30164309
After Detonation of Charge No. 9 Under Centerline of No. 3 Road Wheel
Under Lateral Center of the JSIII Track. Charge Consisted of 6.99 pounds
of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized
Container. Emplaced with 3-Inch Soil Cover.

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59T614: Close-up of Left Side of U.S. M47 Tank, No. 30164309 After Detonation of Charge No. 9 Under Centerline of No. 3 Road Wheel Under Lateral Center of the JSIII Track. Charge Consisted of 6.99 Pounds of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-Inch Soil Cover.

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59P182: General View of Right Side of U.S. M47 Tank, No. 30164306, After Detonation of Charge No. 10 Under Centerline of No. 3 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 5.01 Pounds of Comp B Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-Inch Soil Cover.

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59T1728: Close-up of Right Side of U.S. M47 Tank, No. 30164306 After Detonation of Charge No. 16 Under Center Line of No. 3 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 3.59 Pounds of the H6 Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-Inch Soil Cover.

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59T1729: General View of Right Side of U.S. M47 Tank, No. 30164306 After Detonation of Charge No. 16 Under Centerline of No. 3 Road Wheel Under the Lateral Center of the JSIII Track. Charge Consisted of 3.59 Pounds of the H6 Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-Inch Soil Cover.

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59T1855: General View of Right Side of U.S. M47 Tank, No. 30164306 After Detonation of Charge No. 22 Under Centerline of No. 3 Road Wheel Under Lateral Center of the JSIII Tank Track. Charge Consisted of 2.98 Pounds of H6 Encased in an 8.5-Inch Diameter Cylindrical 24-Gauge Galvanized Container. Emplaced with 3-Inch Soil Cover.

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APPENDIX D

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